

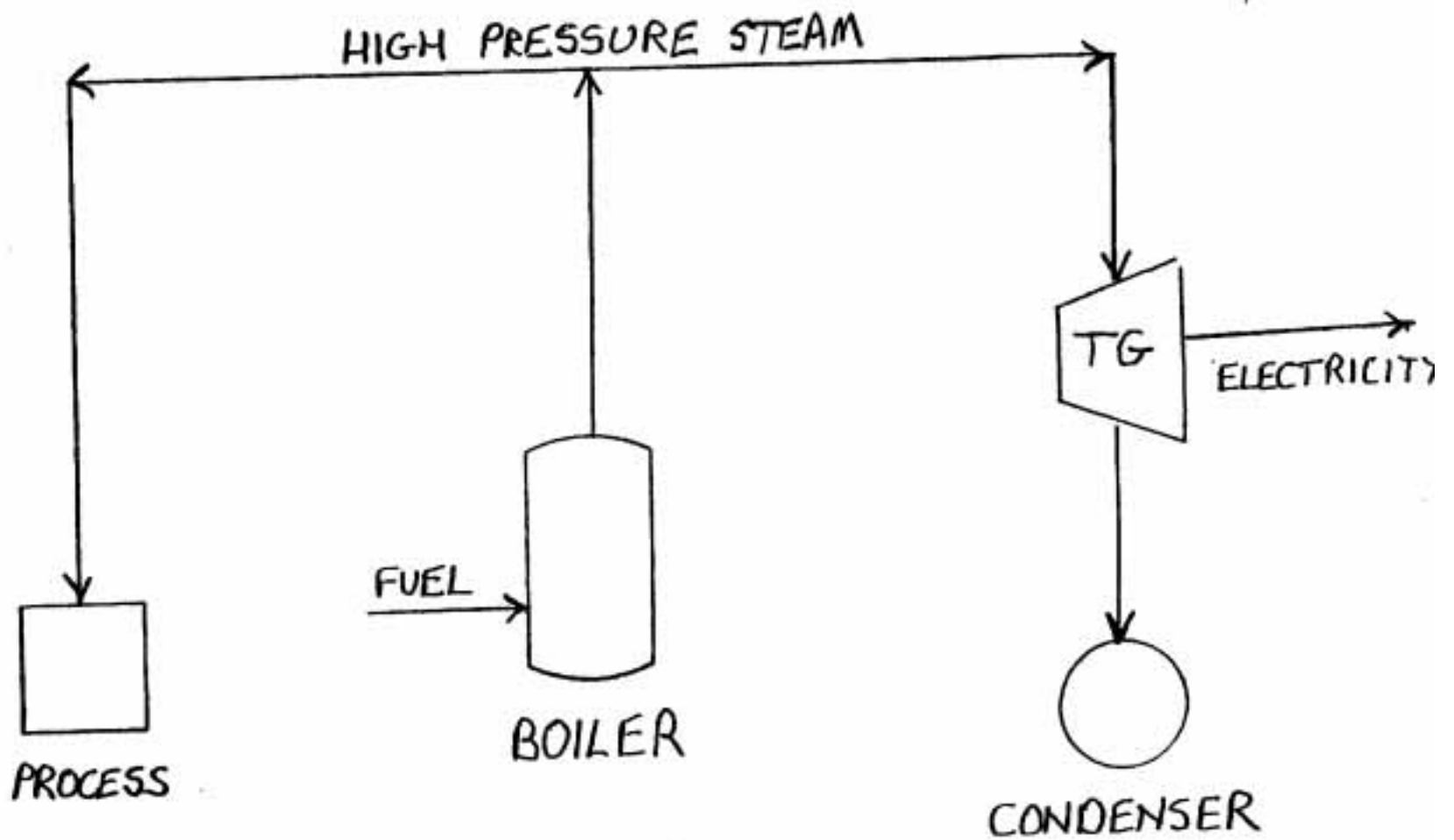
Cogeneration and the Forest Products Industry

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Combined Heat and Power

- Two forms of energy from the same source.
- Definition includes more than cogeneration and may not have the energy efficiency benefits of cogeneration.

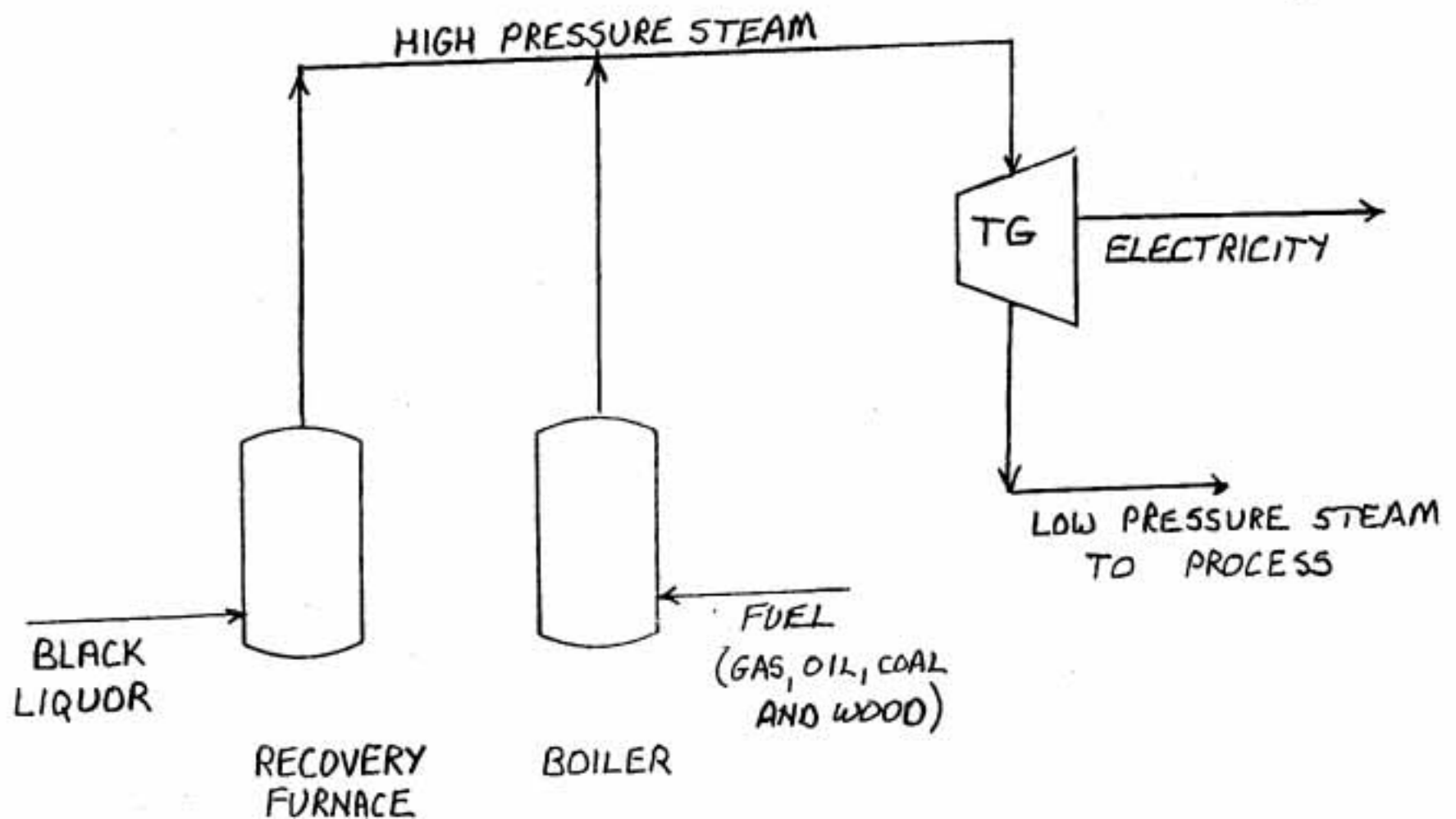
COMBINED HEAT AND POWER



Cogeneration

- Production of electric energy and useful thermal energy (heat or steam) used for industrial, commercial, heating or cooling purposes, through the sequential use of energy.
- CFR Title 18, Volume 1, Part 292, Section 292.202.

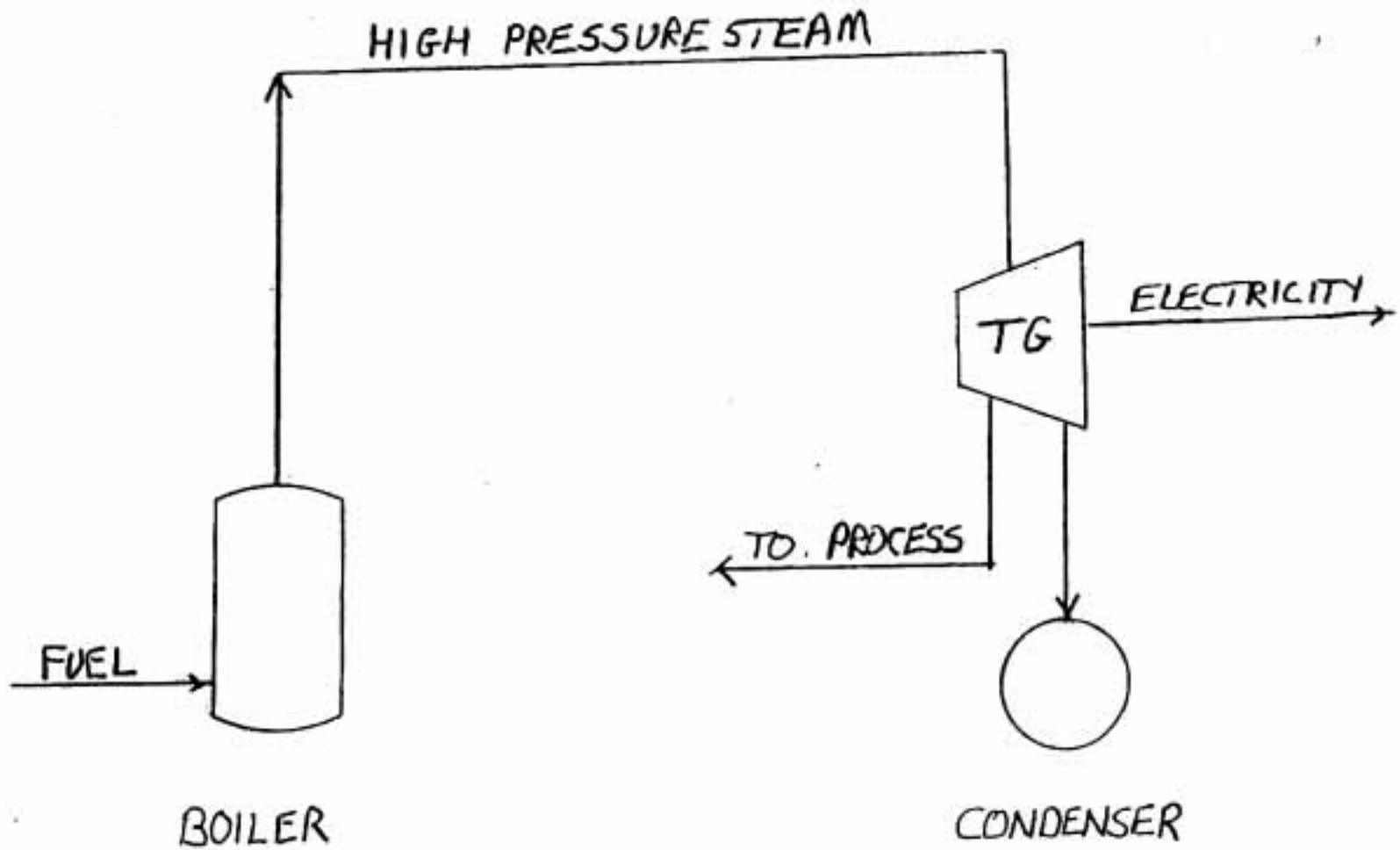
CONVENTIONAL BACK PRESSURE COGENERATION



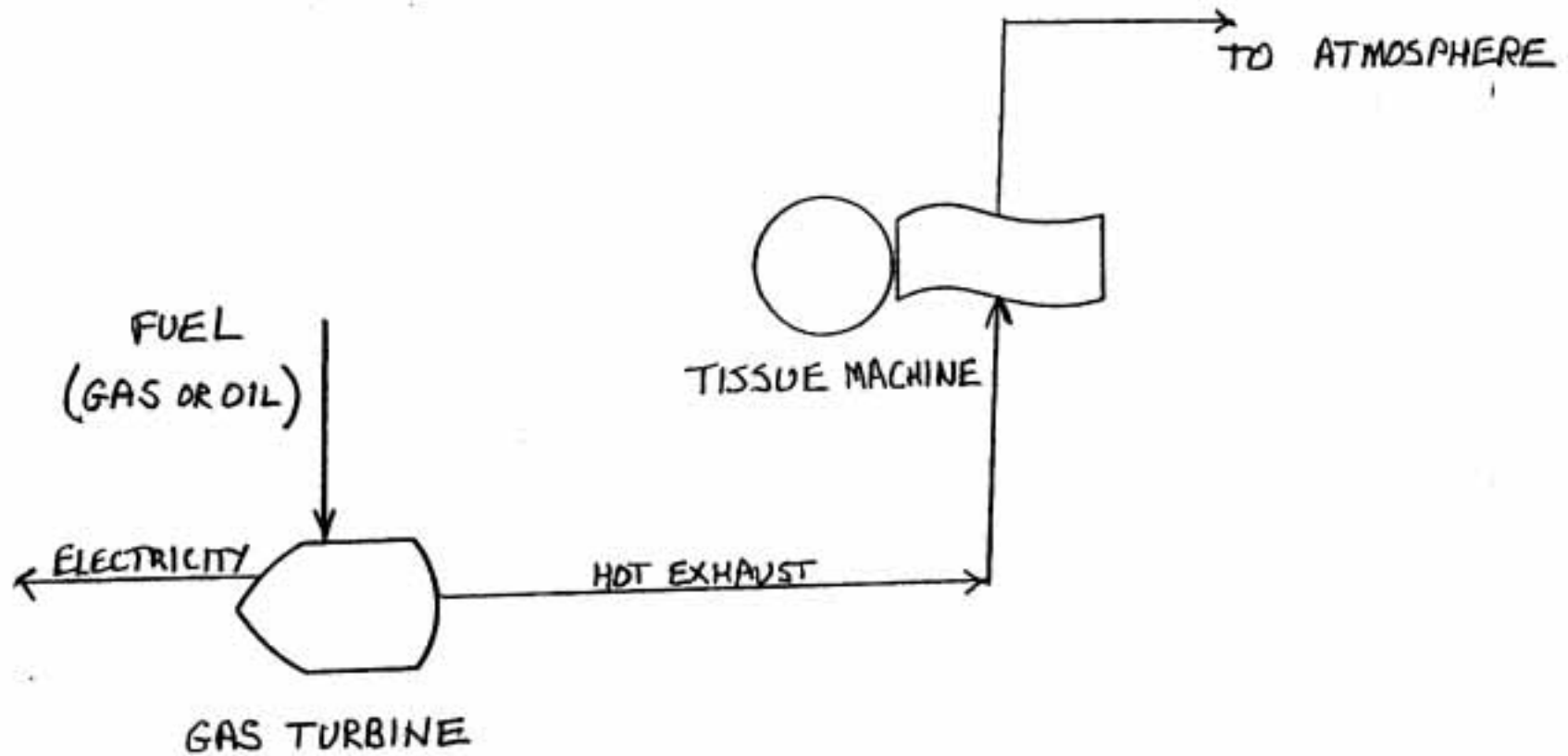
Forest Products Industry Fuels

- Recovery Furnaces
 - Spent Pulping Liquor
- Power Boilers
 - Wood
 - Coal
 - Sludge
 - Tire Chips
 - Natural Gas
 - Oil

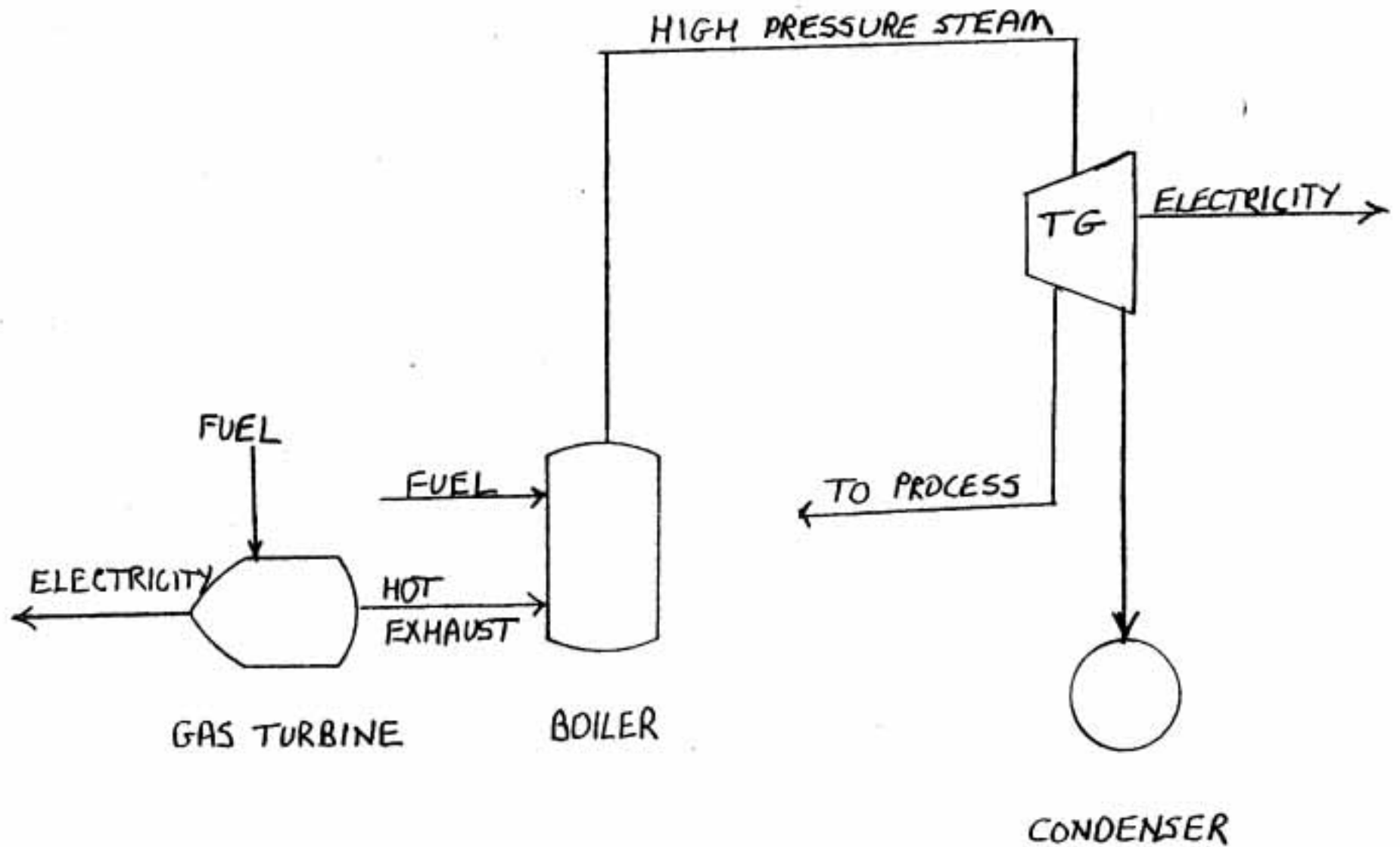
COGENERATION WITH CONDENSING



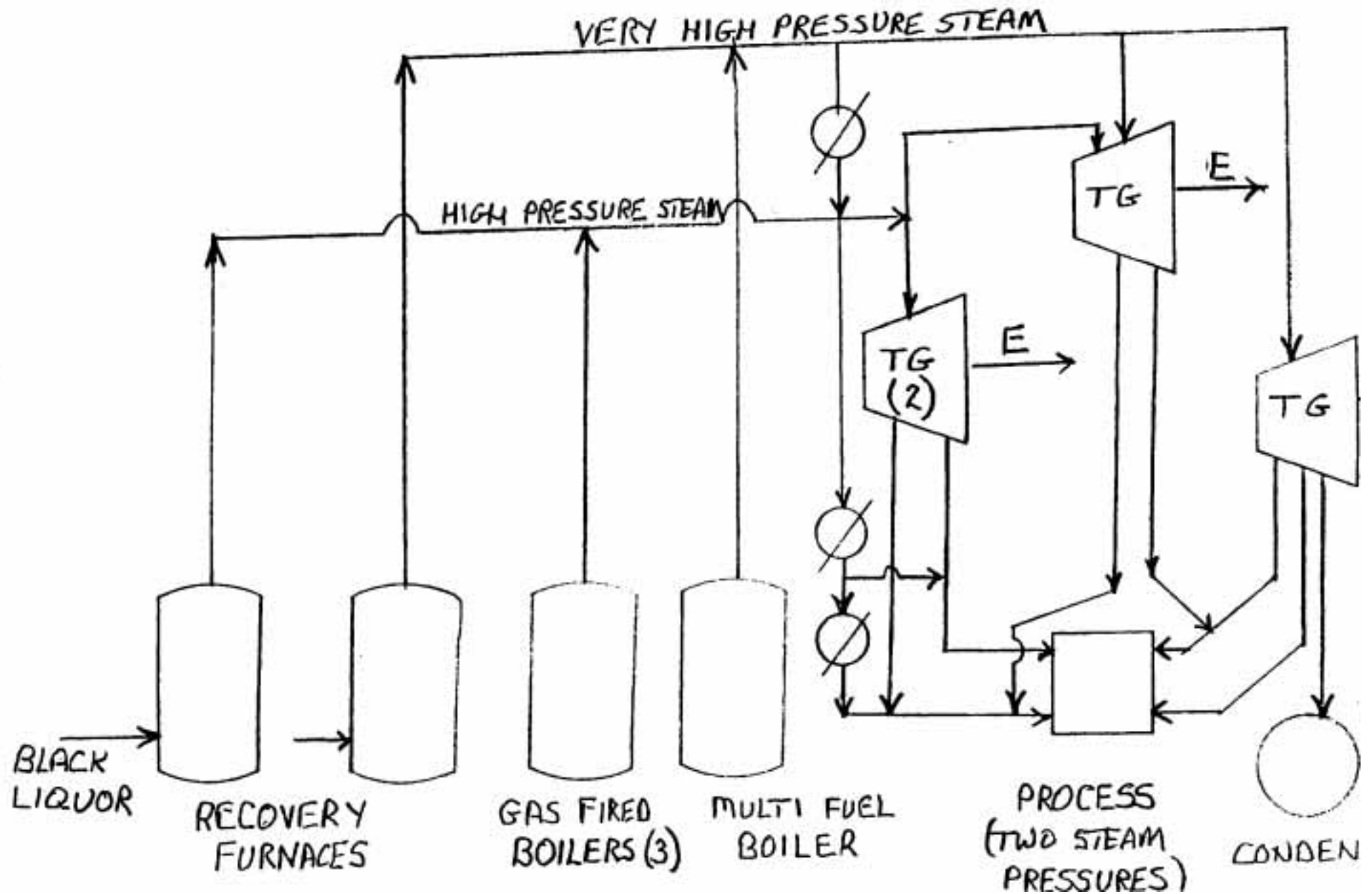
COGENERATION WITH THROUGH DRYING



COMBINED CYCLE COGENERATION WITH CONDENSING



COGENERATION AT PULP AND PAPER MILL IN LEWISTON, ID



Conclusions

- Air emissions are related to fuels burned, not energy form produced.
- Forest products applications are complex and not oriented to use of output measurements to relate to air emissions.
- Use of output measurements to relate to air emissions will be very expensive and in situations of any complexity unworkable and misleading.

Recommendation

- Provide for use of fuel input in multiple forms for emission limitations if the emissions cannot be measured directly.